UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,063	02/19/2002	Hubbert Smith	42P13499	8561

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER
HO, THANG H

ART UNIT	PAPER NUMBER
2188	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	10/080,063	SMITH, HUBBERT
	Examiner	**Art Unit**	
	Thang H Ho	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>22 April 2002</u> .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-43</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-42</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1.   Applicant is reminded of the duty to fully disclose information under 37 CFR 1.56.

Specification

2.   Claims 1-43 are presented for examination.

3.   The disclosure is objected to because of the following informalities:

On page 6, line 25, the recitation of "HowHasasdlkfHBA 26" should be changed

to read --the HBA 26--. Appropriate correction is required.

4.   The specification has not been checked to the extent necessary to determine the presence

of all possible minor errors. Applicant's cooperation is required in correcting any errors of

which applicant may become aware in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 1-32 and 39-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ofek

(United States Patent 5,901,327).

As per claim 1, Ofek discloses in FIG. 1 an adapter (16) to be used in a first network node (SITE A) comprising: circuitry to perform, in response to a first request, a first data storage-related operation associated with a first set of mass storage devices (20) for the second and to issue, also in response to the first request, a second request from the first adapter (16) to a second adapter (44) in a second network node (REMOTE SITE B) in the network to cause a second adapter (44) to perform, in response to the second request, a second data storage-related operation associated with a second set of mass storage devices (48) (e.g. column 12, lines 49-55 " *when the first set of mass data storage devices (20) has valid data in cache... a link adapter transfers data... to the cache in the data storage system housing the secondary (R2) volume...* " and FIGS. 7-8, column 16, lines 22-37).

As per claim 2, Ofek discloses the adapter further comprising: circuitry to issue, in response to a first message from the second adapter (44), a second message to a process in the first network node (SITE A), the first message indicating that the second data storage-related operation has been completed, the second message indicating that a respective data storage-related operation requested by the first request has been completed (e.g. column 13, lines 1-21 *"system containing the secondary (R2) volume acknowledges... the data storage system containing the primary (R1) volume sends DE to the host and the host considers the input/output complete... "*).

As per claims 3 and 7, Ofek discloses that the second request and the first

message each comprise a respective target node address field, initiating node address

field, command field, and message identification field; and respective message

identification fields in the second request and the first message contain identical

respective values (e.g. column 44, lines 21-35).

As per claim 4, Ofek discloses that the first and the second adapters each

comprise a respective I/O processor (e.g. FIG. 1, elements 16 and 44).

As per claim 5, Ofek discloses an adapter (16) to be used in a first network node

(SITE A), the first adapter (16) comprising: circuitry to perform, in response to a request,

a data storage-related operation associated with a first set of mass storage devices (20),

the request being issued from a second adapter (44) in a second network node (REMOTE

SITE B) in response to another request received by the second adapter (44) to cause the

second adapter (44) to perform, in response to the another request, another data storage-

related operation associated with a second set of mass storage devices (48) (e.g. column

12, lines 49-55).

As per claim 6, Ofek discloses the adapter further comprising: circuitry to issue a

first message to the second adapter (44) to indicate that the data storage-related operation

associated with the first set of mass storage devices (20) has been completed, and the

second adapter (44) is configured to issue, in response to the first message, a second

message to a process in the second network node (REMOTE SITE B) (e.g. column 13,

lines 1-21 *"system containing the secondary (R2) volume acknowledges... the data*

storage system containing the primary (R1) volume sends DE to the host and the host

considers the input/output complete... ").

As per claims 8-9, Ofek discloses that the first adapter (14) comprises a first host

bus adapter (26 and 30) coupled to the first set of mass storage devices (20); the second

adapter (44) comprises a second host bus adapter (54 and 66) coupled to the second set of

mass storage devices (48); and the first adapter (14) and the second adapter (44) are

coupled together via a network communication link (40).

As per claim 10, Ofek discloses in FIG. 1 a first input/output (I/O) processor

(16), the first I/O processor (16) being configured so as to able to execute a set of

operations comprising: execution, in response to a first request, of a first data storage-

related operation associated with a first set of mass storage devices (20); issuance, also in

response to the first request, of a second request from a first network node to a second I/O

processor (44) in a second network node (REMOTE SITE B) to cause the second I/O

processor (44) to perform, in response to the second request, a second data storage-

related operation associated with a second set of mass storage devices (48) (e.g. column

12, lines 49-55 *" when the first set of mass data storage devices (20) has valid data in*

cache... a link adapter transfers data... to the cache in the data storage system housing

the secondary (R2) volume..." and FIGS. 7-8, column 16, lines 22-37).

As per claim 11, Ofek further discloses that the first network node (SITE A)
comprises the first I/O processor (16) and the first set of mass storage devices (20); the
second network node (REMOTE SITE B) comprises the second set of mass storage
devices (48); and the first network node (SITE A) and the second network node
(REMOTE SITE B) are coupled together via a network communication link (40).

As per claim 12, Ofek discloses that the second data storage-related operation
comprises one or more of the following operations: designation of a first data volume in a
second network node (REMOTE SITE B) in which data stored in a second data volume
in the first network node (SITE A) is to be replicated; and replication in the first data
volume of the data (e.g. column 12, lines 6-40).

As per claim 13, Ofek discloses that the second data storage-related operation
comprises one or more of the following operations: termination of a previously-
established association between a first data volume in the second network node and a
second data volume in the first network node, the association designating that data stored
in the second data volume is to be replicated in the first data volume; and re-
establishment of the previously-established association after the previously-established
association has been terminated (e.g. column 13, lines 15-21).

As per claim 14, Ofek discloses that the first I/O processor (16) being configured to execute a set of operations comprising: execution, in response to a request, of a first data storage-related operation associated with a first set of mass storage devices (20); and issuance, after completion of the execution of the first data storage-related operation, of a first message from a first network node (SITE A) to a second I/O processor (44) in a second network node (REMOTE SITE B) to cause the second I/O processor (44) to issue, in response to the first message, a second message to a process in the second network node (REMOTE SITE B), the second I/O processor (44) being operatively configurable both to generate the request and to perform a second data storage-related operation associated with a second set of mass storage devices, in response to another request from the process (e.g. column 12, lines 49-55 " *when the first set of mass data storage devices (20) has valid data in cache... a link adapter transfers data... to the cache in the data storage system housing the secondary (R2) volume...* " and FIGS. 7-8, column 16, lines 22-37).

As per claim 15, Ofek discloses that the first set of mass storage devices (20) comprises one or more respective mass storage devices; the second set of mass storage devices (48) comprises one or more respective mass storage devices; and the first message is comprised in a frame (e.g. FIG. 4, elements 223a-d, FIG. 1, element 40 and column 44, lines 21-35).

As per claims 16-30, the claims encompass the same scope of invention as to that of claims 1-15, respectively, however the claims are drafted as method format rather than apparatus format, the claims are therefore rejected for the same reasons as being set forth above.

As per claim 31, Ofek discloses in FIG. 1 a network comprising: a first network node (SITE A) associated with a first set of mass storage devices (20) and including a first input/output (I/O) processor (16); a second network node (REMOTE SITE B) remote from the first network node, associated with a second set of mass storage devices (48), and including a second I/O processor (44); a network communication link (40) coupling the first network node (SITE A) to the second network node (REMOTE SITE B); the first I/O processor (16) configured so as to be able to cause the following operations: execution, in response to a first request, of a first data storage-related operation associated with the first set of mass storage devices (20); issuance, also in response to the first request, of a second request from the first network node (SITE A) to the second network node (REMOTE SITE B) via the link (40) to cause the second I/O processor (44) to perform, in response to the second request, a second data storage-related operation associated with the second set of mass storage devices (48) (e.g. column 12, lines 49-55 *" when the first set of mass data storage devices (20) has valid data in cache... a link adapter transfers data... to the cache in the data storage system housing the secondary (R2) volume... "* and FIGS. 7-8, column 16, lines 22-37).

As per claim 32, Ofek discloses that the second I/O processor (46) is configured

so as to be able to cause the following operations to be executed: execution, in response

to the second request, of the second data storage-related operation; and issuance, after

completion of the execution of the second data storage-related operation, of a first

message from the second network node (REMOTE SITE B) to the first network node

(SITE A) via the link (40) to cause the first I/O processor (16) to issue a second message

to a process in the first network node (SITE A) to indicate a completion of the first data

storage-related operation and the second data storage-related operation (e.g. column 13,

lines 1-5 "...the secondary (R2) volume acknowledges... the primary (R1) volume sends

De to the host... considers the input/output complete and starts the next input/output

operation.").

As per claim 39, Ofek discloses in FIG. 1 a first network node (SITE A),

comprising: a first processor (16) configured to be able to cause: execution, in response

to a first request, of a first data storage-related operation associated with a first set of

storage devices (20), the first set of storage devices (20) being associated with the first

network node (SITE A); and issuance, also in response to the first request, of a second

request from the first network node (SITE A) to a second network node (REMOTE SITE

B) to cause a second processor (44) in the second network node (REMOTE SITE B) to

perform, in response to the second request, a second data storage-related operation

associated with a second set of storage devices (48), the second set of storage devices

(48) being associated with the second network node (REMOTE SITE B) (e.g. column 12,

lines 49-55 *" when the first set of mass data storage devices (20) has valid data in cache... a link adapter transfers data... to the cache in the data storage system housing the secondary (R2) volume... "* and FIGS. 7-8, column 16, lines 22-37).

As per claim 40, Ofek discloses that the set of storage devices comprises a set of one or more mass storage devices (e.g. FIG. 4, elements 223a-d).

As per claim 41, Ofek discloses in FIG. 1 that the second network node (REMOTE SITE B) is remote from the first network node (SITE A).

As per claim 42, Ofek discloses in FIG. 1 a first network node (SITE A), comprising: a first processor (16) configured to be able to cause the following operations to be executed: execution, in response to a request, of a first data storage-related operation associated with a first set of storage devices (20); and issuance, after completion of the execution of the first data storage-related operation, of a first message from the first network node (SITE A) to a second processor (44) in a second network node (REMOTE SITE B) to cause the second processor (44) to issue, in response to the first message, a second message to a process in the second network node (REMOTE SITE B), the second processor (44) being operatively configurable both to generate the request and to perform a second data storage-related operation associated with a second set of storage devices (48), in response to another request from the process.

As per claim 43, Ofek further discloses that the first set of storage devices (20) comprises one or more mass storage devices; the second set of storage devices (48) comprises one or more mass storage devices; and the first message is comprised in a frame (e.g. FIG. 4, elements 223a-d, FIG. 1, element 40 and column 44, lines 21-35).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

8.   Claims 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek

(United States Patent 5,901,327).

As per claims 33-38, Ofek discloses the invention as claimed, detailed above with

respect to claims 1-32 and 39-43. Ofek however does not particularly disclose a computer-

readable medium of instructions to be implemented on a client computer as being claimed in

claims 1-32 and 39-43. However, one of ordinary skill in the art would have recognized that

computer readable medium (i.e., floppy, CD-ROM, etc.) carrying computer-executable

instructions for implementing a method, because it would facilitate the transporting and

installing of the method on other systems, is generally well-known in the art. For example, a

copy of the Microsoft Windows operating system can be found on a CD-ROM from which

Windows can be installed onto other systems, which is a lot easier that running a long cable or

hand typing the software onto another system. It would have been obvious to put Ofek's

program on a computer readable medium, because it would facilitate the transporting, installing

and implementing of Ofek's program on other systems.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. See Form PTO-892.

10.   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to (703) 872-9306

Hand–delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA. Sixth Floor (Receptionist).

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The

examiner can normally be reached on Monday-Friday from 7:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on 703-306-2903. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-9600.

Thang Ho   **Kevin L. Ellis**
Art Unit 2188   **Primary Examiner**
November 14, 2003